

### **Remarks/Arguments**

Applicant thanks the Examiner for careful consideration of the application.

Applicant notes, with appreciation, that claim 49 has been allowed.

In the previous response Applicant cancelled claims 54-56 to place application in condition for allowance. In this response Applicant adds new claims 57-60 for prosecution to further clarify the nature of Applicant's claimed invention.

#### **I. Rejections under 35 U.S.C. §102(e):**

Examiner, on page 2 of the Office Communication has rejected claims 1, 3-10, 12, 15-17, 19, 27-29, 31-32, 34, 37, 44, and 50 under 35 U.S.C. §102(e) as being anticipated by Seet et al. (U.S. Patent Publication No. 2004/0131878, "Seet") This rejection is respectfully traversed with regard to claims 1, 3-10, 12, 15-17, 19, 27-29, 31-32, 34, 37, 44, and 50 because all of the elements of the claimed invention are not present in the cited references.

Independent claim 1, discloses a method of making a tantalum structure, "comprising creating a tantalum layer disposed on a first layer region of a first layer and on a second layer region of a second layer, wherein said tantalum layer is a substantially bcc-phase tantalum region on said first layer region and said tantalum layer is a non-bcc-phase tantalum region on said second layer region." In contrast, Seet discloses a method of "sputtering a Ta layer comprised of alpha phase Ta on a Cu layer. *See* abstract. Applicant traverses Examiner's statement that paragraphs 67-92 of Seet disclose Applicant's claimed invention. Seet discloses that the "Ta layer 108 is comprised of alpha phase Ta. The Ta layer 108 is comprised of alpha phase Ta and beta phase Ta." Page 4, paragraph 67. Seet also discloses the "Ta layer is preferably comprised of alpha phase Ta with between 35-50 wt % and Beta phase Ta wt % between 50-65." Page 4, paragraph 71. On the same page in paragraph 82 Seet discloses that in "this embodiment, a mixed phase of alpha Ta and beta Ta are formed." In a second embodiment on the same page in paragraphs 83 and 84 Seet discloses

forming "a Ta layer comprised of alpha Ta on a Cu surface that is pre-cleaned before Ta sputter." Thus, contrary to Examiner's assertion Seet discloses either the creation of an alpha phase Ta layer on Cu or a mixed phase Ta layer (alpha phase and beta phase) on Cu. Seet does not disclose creating a tantalum layer disposed on a first layer region of a first layer and on a second layer region of a second layer, wherein said tantalum layer is a substantially bcc-phase tantalum region on said first layer region and said tantalum layer is a non-bcc-phase tantalum region on said second layer region. Applicant asserts that Seet in disclosing a mixed phase Ta layer is in contradistinction to Applicant's claimed invention including a first layer region having a substantially bcc phase Ta region and a second layer region having non-bcc phase Ta region.

Since a proper anticipation rejection requires that there be present in a single prior art reference a disclosure of all of the elements of the claimed invention arranged as in the claims, Applicant believes that Seet does not anticipate the present invention. *See* MPEP 2131. In addition, dependent claims 3-10, 12, 15-17, 19 27-29, 31-32, 34, 37, and 44 are dependent upon independent claim 1, and are therefore believed to be allowable, at least for this reason alone, as dependent upon a believed allowable claim. In addition, independent claim 50 discloses "wherein said tantalum layer forms a substantially bcc-phase tantalum region where said tantalum layer is in contact with said bcc-phase-tantalum forming seed region, and wherein said tantalum layer forms a non-bcc-phase tantalum region where said tantalum layer is not in contact with said bcc-phase tantalum forming seed region," which is also not disclosed by Seet for the same reasons as discussed above for independent claim 1. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claims 1, 3-10, 12, 15-17, 19, 27-29, 31-32, 34, 3, 44, and 50 based on Seet under 35 U.S.C. §102(e).

In addition, in regards to dependent claim 3, claim 3 discloses "wherein creating said tantalum layer comprises creating said substantially bcc-phase tantalum region in contact with said non-bcc-phase tantalum region." Applicant asserts that for the same reasons that Seet does not anticipate claim 1 Seet does not anticipate claim 3 since the creation of a mixed phase Ta layer does not disclose wherein creating said tantalum layer comprises creating said substantially bcc-phase tantalum region in contact with

said non-bcc-phase tantalum region. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claim 3, at least for this reason alone, based on Seet under 35 U.S.C. §102(e).

In regards to dependent claim 4, claim 4 discloses "wherein creating said tantalum layer comprises creating said tantalum layer wherein said substantially bcc-phase tantalum region and said non-bcc-phase tantalum region are contiguous and form a continuous tantalum film." Applicant asserts that for the same reasons that Seet does not anticipate claim 1 Seet does not anticipate claim 4 since the creation of a mixed phase Ta layer does not disclose wherein creating said tantalum layer comprises creating said tantalum layer wherein said substantially bcc-phase tantalum region and said non-bcc-phase tantalum region are contiguous and form a continuous tantalum film. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claim 4, at least for this reason alone, based on Seet under 35 U.S.C. §102(e).

In regards to dependent claim 5, claim 5 discloses "forming said first layer region over a substrate; and forming said second layer region over said substrate." Applicant asserts that for the same reasons that Seet does not anticipate claim 1 Seet does not anticipate claim 5 since the creation of a mixed phase Ta layer does not disclose forming said first layer region over a substrate; and forming said second layer region over said substrate. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claim 5, at least for this reason alone, based on Seet under 35 U.S.C. §102(e).

In regards to dependent claim 12, claim 12 discloses "wherein creating said bcc-phase-tantalum forming first layer comprises creating said bcc-phase-tantalum forming first layer disposed on a sacrificial layer." Applicant has been unable anywhere within Seet to find the disclosure of the use of a sacrificial layer. Applicant respectfully requests that Examiner particularly point out where in Seet such a disclosure is made. Since Examiner has provided no mention or explanation that Seet discloses the use of a sacrificial layer, Applicant respectfully requests that the Examiner withdraw the rejection of claim 12 based on Seet under 35 U.S.C. §102(e) for this reason alone.

In regards to dependent claim 16, claim 16 discloses "wherein creating said first layer comprises creating a bcc-phase-tantalum forming substrate, wherein said second layer is disposed over said bcc-phase-tantalum forming substrate." Applicant has been unable anywhere within Seet to find the disclosure of the use of a bcc-phase-tantalum forming substrate. Applicants respectfully request that Examiner particularly point out where in Seet such a disclosure is made. Since Examiner has provided no mention or explanation that Seet discloses the use of a bcc-phase-tantalum forming substrate, Applicant respectfully requests that the Examiner withdraw the rejection of claim 16 based on Seet under 35 U.S.C. §102(e) for this reason alone.

In regards to dependent claims 27 and 28, dependent claim 27 discloses "wherein creating said tantalum layer comprises creating said tantalum layer wherein said substantially bcc-phase tantalum region has a resistivity of about 13 micro-ohm centimeters, and wherein said non-bcc-phase tantalum region has a resistivity of about 220 micro-ohm centimeters." Although Applicant acknowledges that Seet on page 4 in paragraph 81 does disclose the difference in bulk resistivity between alpha and beta phases of tantalum; Applicant asserts that Seet in disclosing the deposition of a mixed phase does not disclose said substantially bcc-phase tantalum region has a resistivity of about 13 micro-ohm centimeters, and wherein said non-bcc-phase tantalum region has a resistivity of about 220 micro-ohm centimeters. Since Examiner has provided no reasoned explanation how Seet in disclosing a mixed phase Ta layer discloses a substantially bcc-phase tantalum region having a resistivity of about 13 micro-ohm centimeters, and a non-bcc-phase tantalum region having a resistivity of about 220 micro-ohm centimeters. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection of claim 27 based on Seet under 35 U.S.C. §102(e) for this reason alone. Similarly claim 28 discloses "wherein creating said tantalum layer comprises creating said tantalum layer wherein said substantially bcc-phase tantalum region and said non-bcc-phase tantalum region each has a resistivity and said resistivity of said substantially bcc-phase tantalum region is about 10 times less than said resistivity of said non-bcc-phase tantalum region," which Applicant asserts Seet also does not disclose based on similar arguments presented for claim 27. Therefore,

Applicant respectfully requests that the Examiner withdraw the rejection of claim 28 based on Seet under 35 U.S.C. §102(e) for this reason alone.

**IV. Allowable subject matter:**

Applicant acknowledges that Examiner has objected to claims 2, 11, 13-14, 18, 20-26, 30, 33, 35-36, 38-43, 45-48, and 51-53 as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Since Applicant believes that independent claims 1, 49, and 50 are each allowable over Seet Applicant has chosen at this time not to amend the objected to claims.

Therefore, in view of the foregoing Amendment and Remarks, Applicant believes the present application to be in a condition suitable for allowance. Examiner is respectfully urged to withdraw the rejections, reconsider the present Application in light of the foregoing Amendment, and pass the amended Application to allowance.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is respectfully requested to call Applicant's representative at (541) 715-1694 to discuss the steps necessary for placing the application in condition for allowance.

Favorable action by the Examiner is solicited.

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Date: 27 November 2006